

FIG. 1

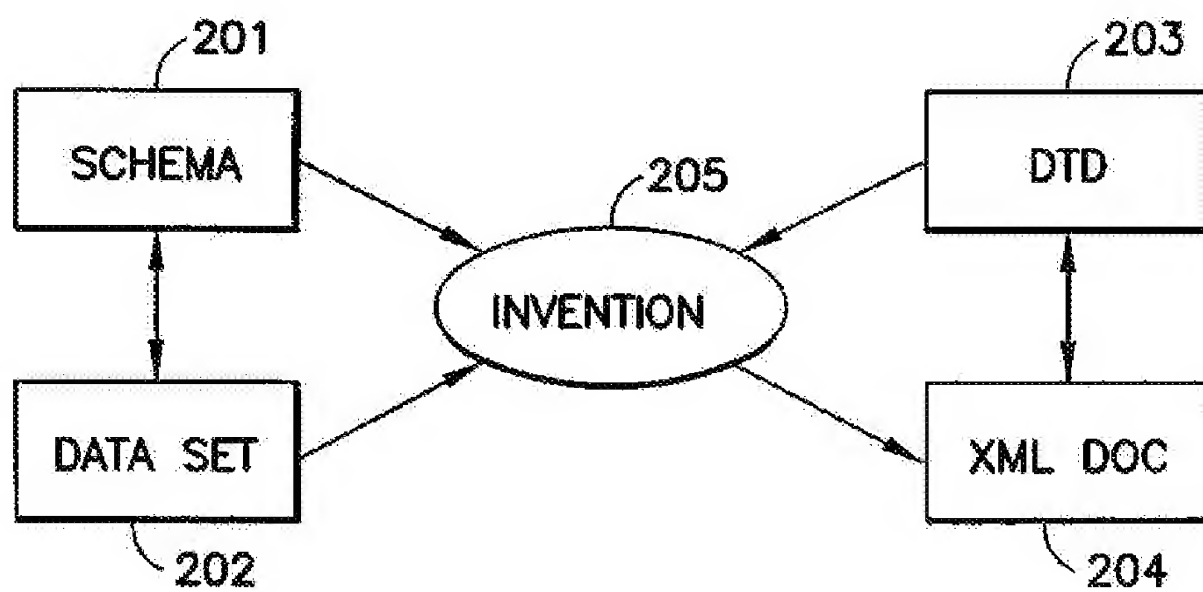


FIG. 2

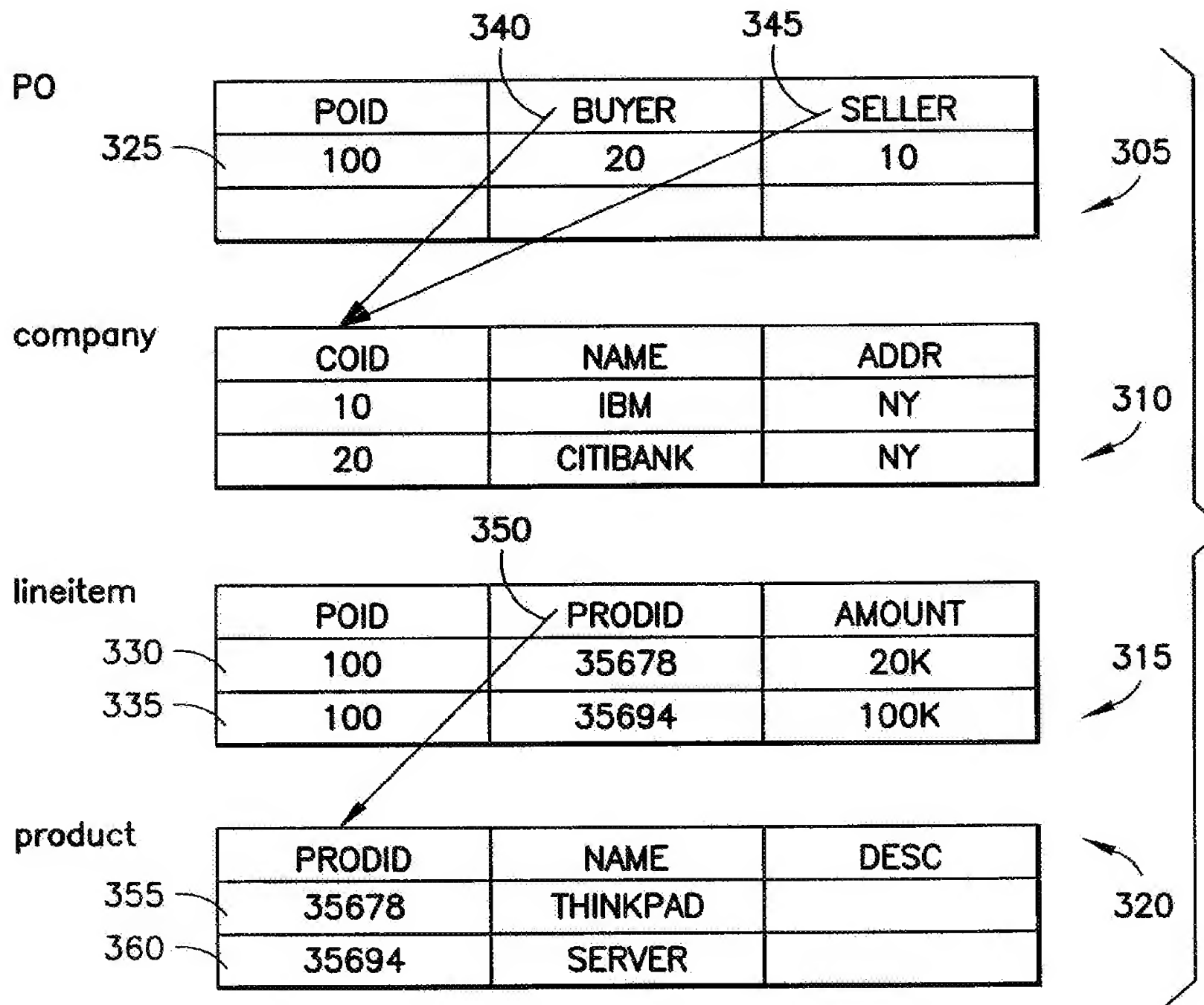


FIG.3a

```

301  <!DOCTYPE PO [
302  <!ELEMENT PO (id, buyer, seller, (lineitem)*)>
303  <!ELEMENT id (#PCDATA)>
304  <!ELEMENT buyer (address)>
323  <!ATTLIST buyer
304      name CDATA #REQUIRED>
324  <!ELEMENT seller (address)>
324  <!ATTLIST seller
311      name CDATA #REQUIRED>
307  <!ELEMENT address (#PCDATA)>
308  <!ELEMENT lineitem (prodname, amount)>
310  <!ELEMENT prodname (#PCDATA)>
310  <!ELEMENT amount (#PCDATA)>
    ]>
320

```

FIG.3b

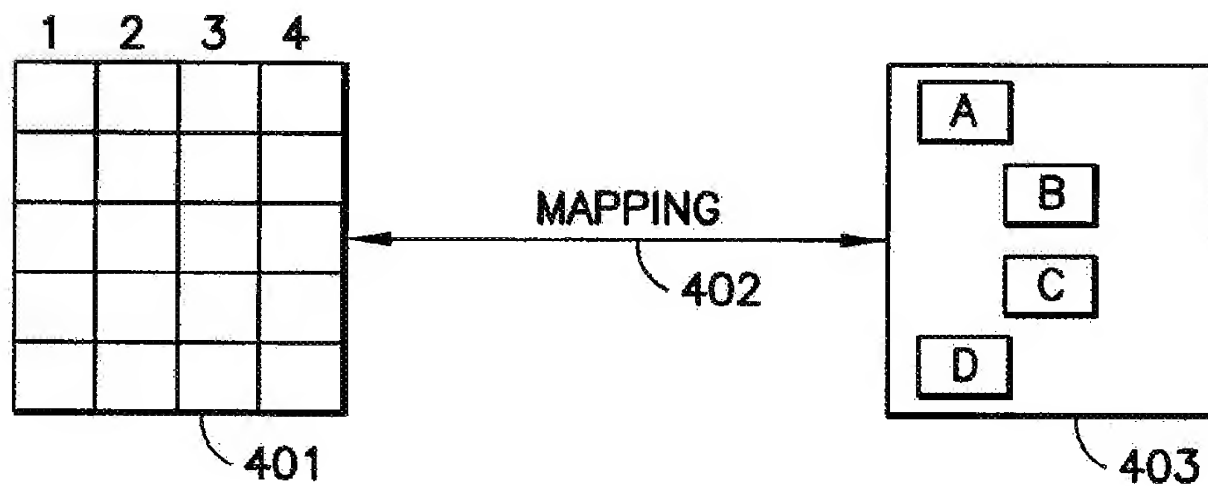


FIG.4

```

<IDOC TYPE PO [
  <!ELEMENT PO (id, buyer, seller,
    500 (lineitem)*::w:= row(lineitem, poid, PO.poid(r)) )>
    ::r:=row(PO, poid, x) 510
  <!ELEMENT id (#PCDATA:PO.poid(r))> 515
  <!ELEMENT buyer (address)> ::s:= row(company, id PO.buyer(r)) 535
  <!ATTLIST buyer
    name CDATA #REQUIRED :company.name(s)> 520
  <!ELEMENT seller (address)> ::s:= row(company, id, PO.seller(r)) 540
  <!ATTLIST seller
    name CDATA #REQUIRED :company.name(s)>
  <!ELEMENT address (#PCDATA :company.addr(s))>
  <!ELEMENT lineitem (prodname,
    545 amount)> ::v:= row(prod, prodid, lineitem.prodid(w)) 525
  <!ELEMENT prodname (#PCDATA :product.prodname(v))>
  <!ELEMENT amount (#PCDATA :lineitem.amount(w))>
]>

```

FIG.5

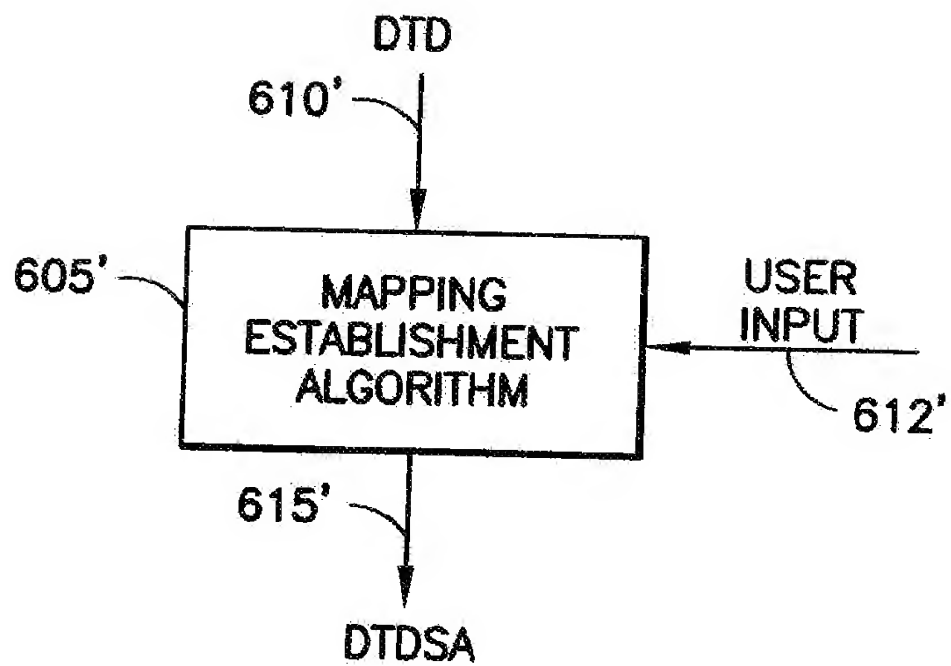


FIG. 6a

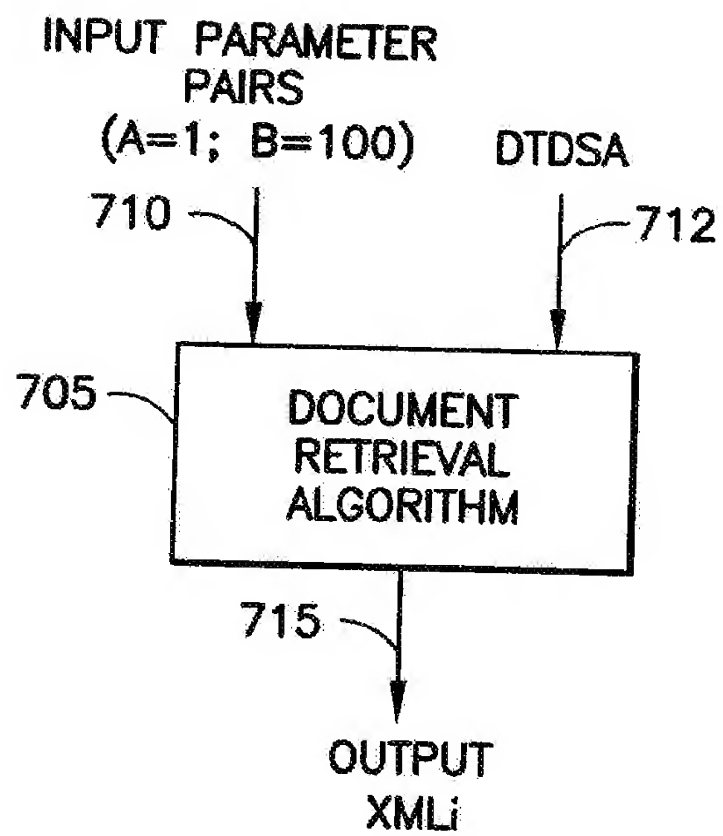


FIG. 7a

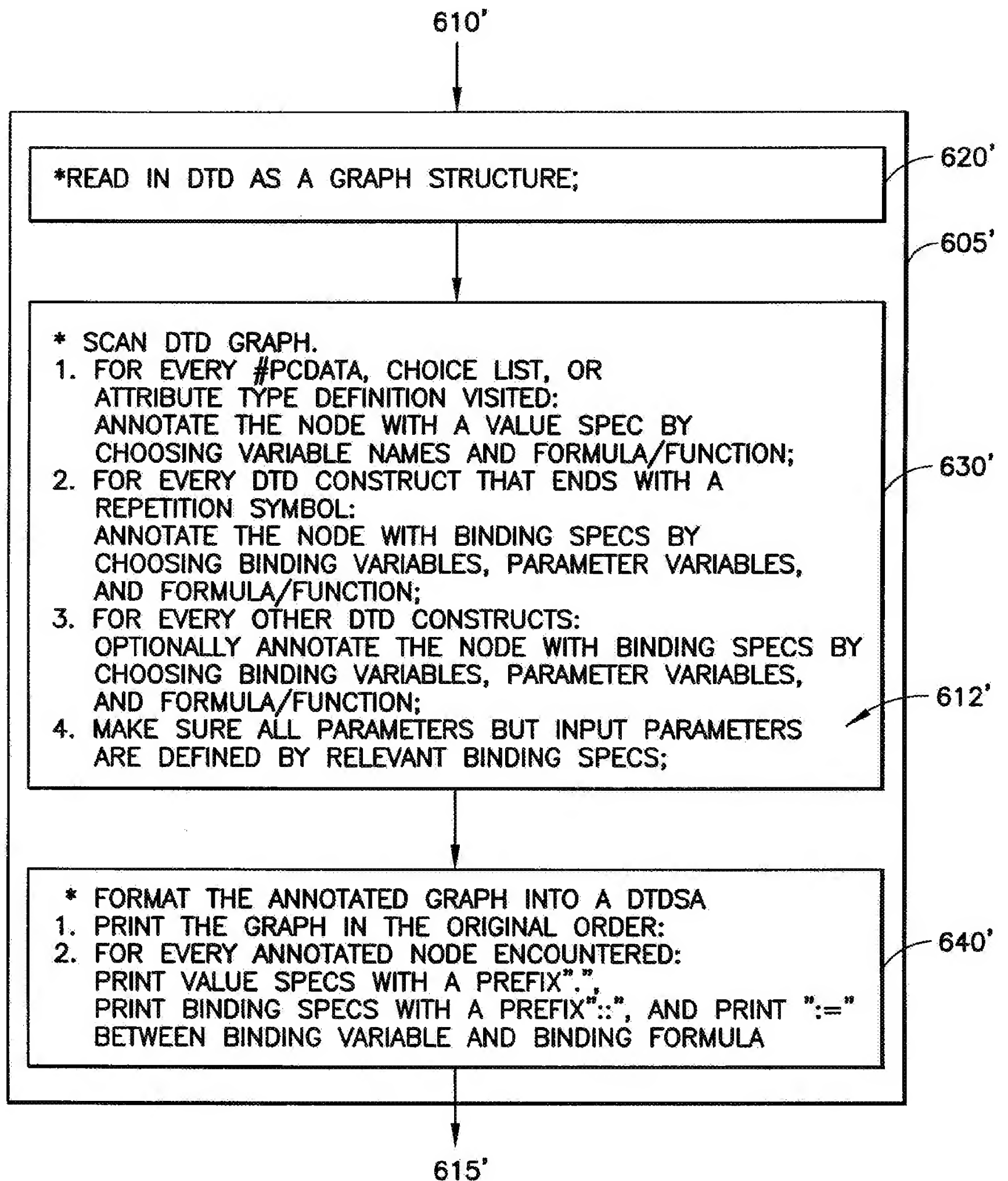


FIG.6b

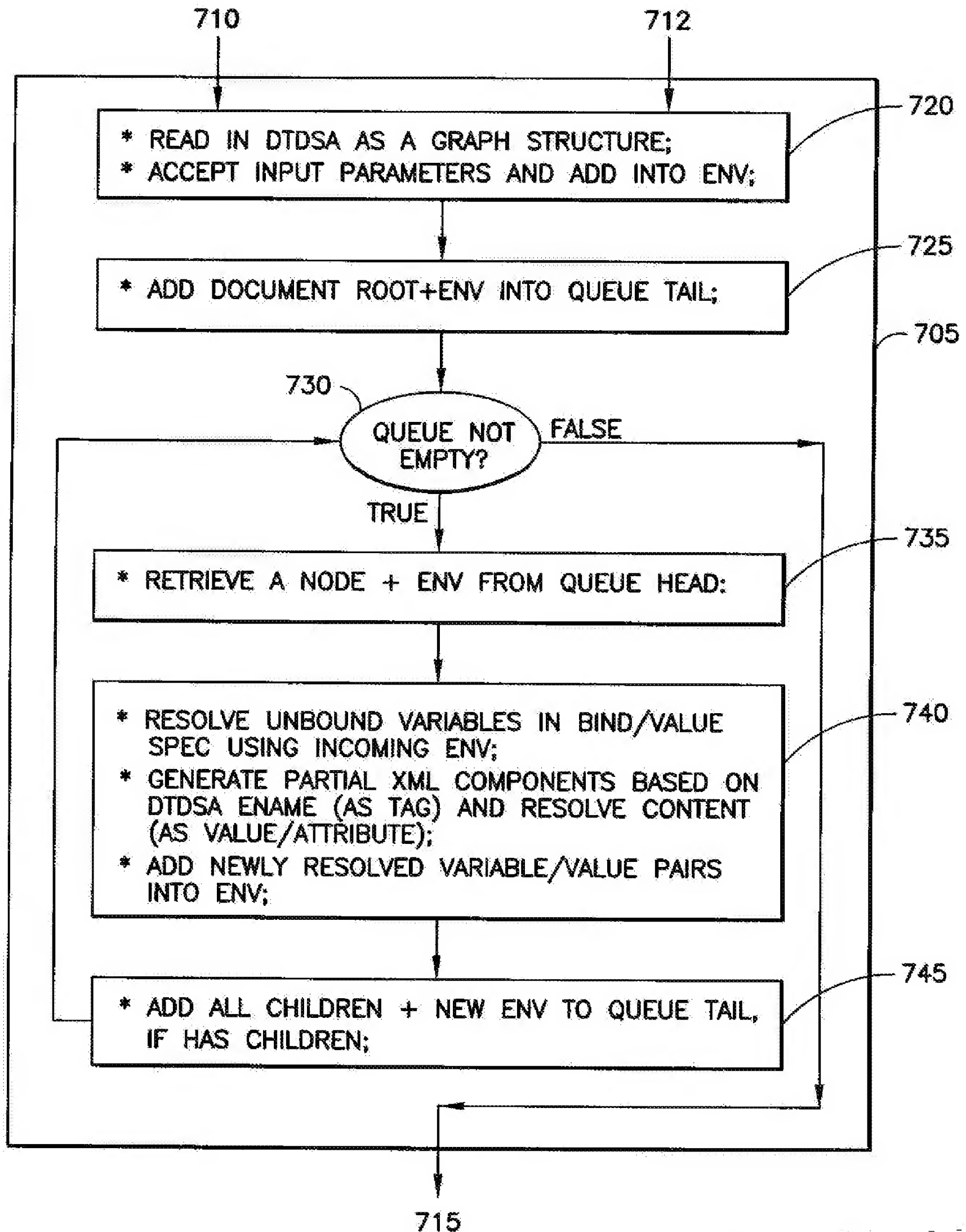


FIG. 7b

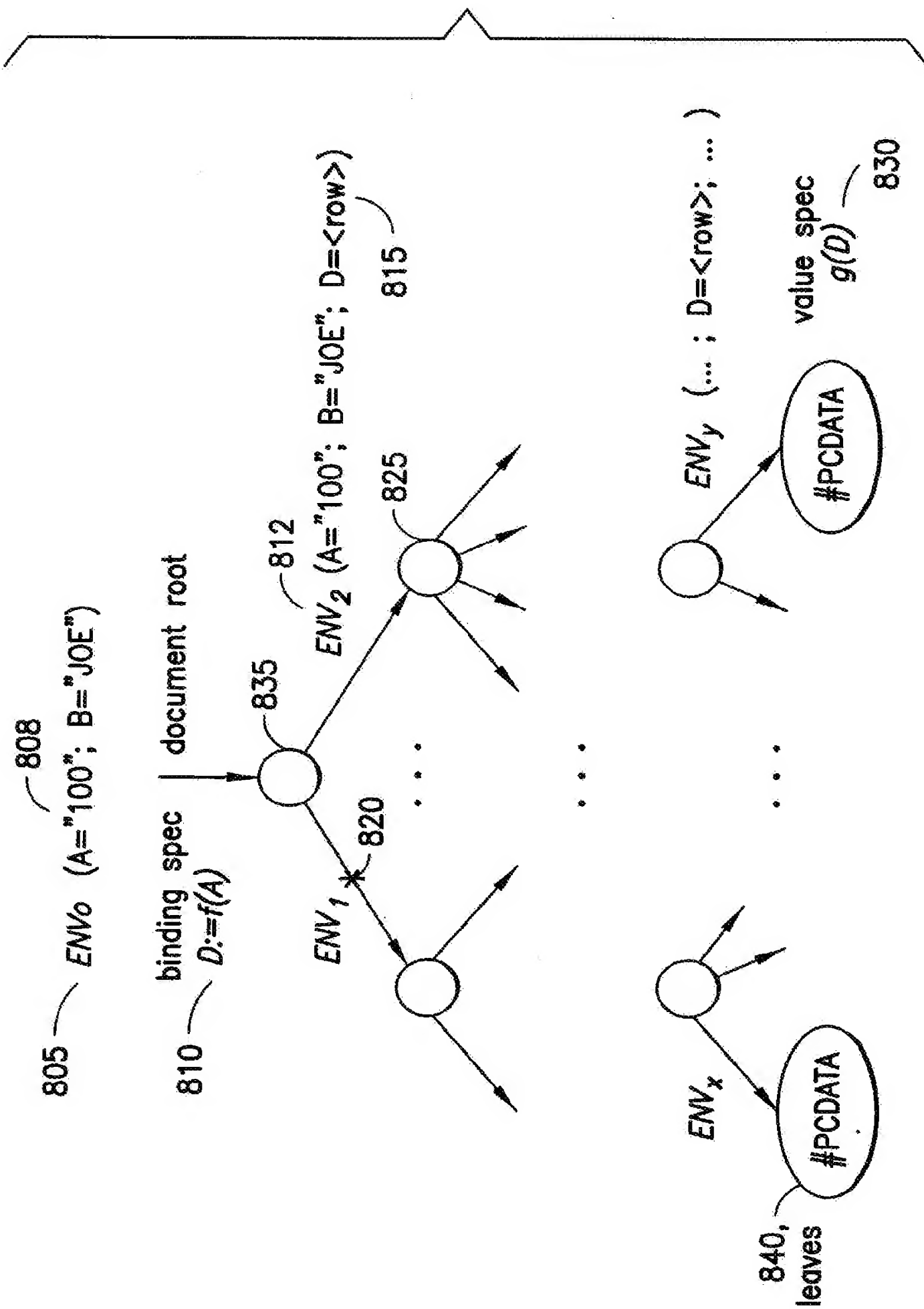


FIG.8

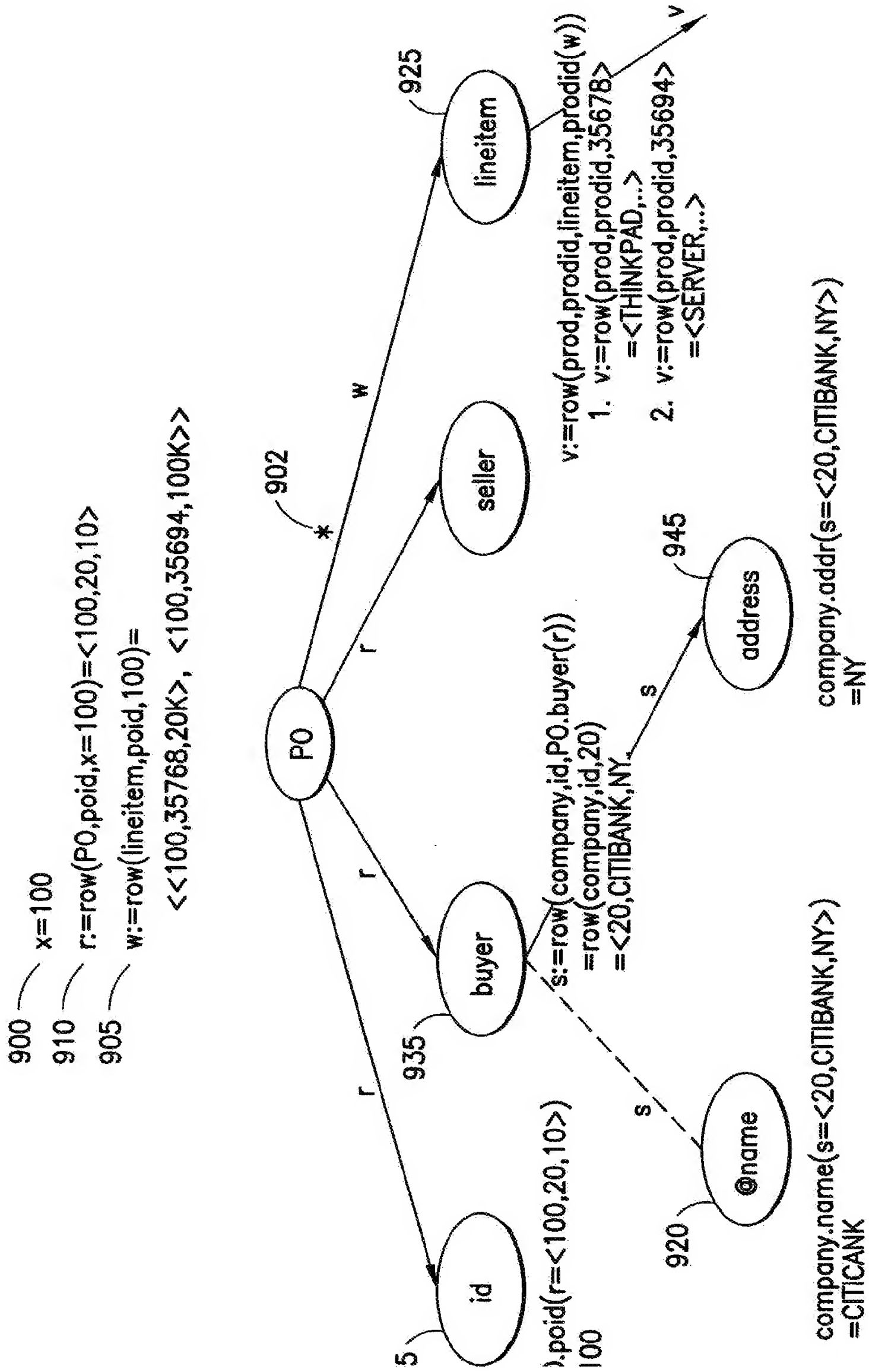


FIG.9

```
<PO>
  <id> 100 </id>
  <buyer name="CITIBANK">
    <address> NY </address>
  </buyer>
  <seller name = "IBM">
    <address> NY </address>
  </seller>
  <lineitem>
1010 — <prodname> THINKPAD </prodname>
        <amount> 20K </amount>
        </lineitem>
1015 — <lineitem>
        <prodname> SERVER </prodname>
        <amount> 100K </amount>
        </lineitem>
</PO>
```

FIG.10